

REMARKS

Claims 15-26 and 49-56 were examined in the Office Action. Claims 15, 17, 22, 49, 50 and 51 have been canceled; claims 16, 18, 19, 23, 24, 26, 52, 53 and 56 have been amended; and new claims 57 and 58 have been added. Claims 16, 18, 19-21, 23-26 and 52-58 are therefore presented for reconsideration. Claims 19, 24 and 53 are the only independent claims.

THE AMENDMENTS

The pending claims are presented in logical order as dictated by their dependencies.

Claim 19 is now written in independent form, but without the limitations of intervening claims 16 and 18. Claim 19 thus includes the limitations of parent claims 15 and 17 (which have been canceled). Added to claim 19 to insure antecedent basis for later recitations are the "front end" and the "rear end" of the inner portion of the nozzle.

The dependency of claims 16 and 18 has been changed due to the cancellation of claims 15 and 17.

Claim 24 is now written in independent form, but without the limitations of intervening claim 23. Claim 24 thus includes the limitations of parent claim 22 (which has been canceled). Added to claim 24 to insure antecedent basis for later recitations are the "front end" and the "rear end" of the inner portion of the nozzle.

The dependency of claim 23 has been changed due to the cancellation of claim 22.

Added to claim 24 for the sake of clarity is the relative melting temperature of the material for brazing the heating element to the inner portion of the nozzle.

Claim 53 is now written in independent form to include the limitations of parent claim 49 (which has been canceled). Added to claim 53 to insure antecedent basis for later recitations are the "front end" and the "rear end" of the inner portion of the nozzle.

Claims 50 and 51 have been canceled because they would have been repetitious of claims 54 and 55, respectively.

The dependency of claims 52 and 56 has been changed due to the cancellation of claims 49 and 55.

New dependent claim 57 recites additional (collar portion) features that are already recited in claim 24. New claim 58 specifies that the same material is used to bond the collar portion and the heating element.

THE REJECTION

Claims 15-18, 20-23, 25, 26, 49-52 and 54-56 stand rejected under 35 U.S.C. §102(b) as anticipated by Gellert (US 4,768,283). Claims 19, 24 and 53 stand rejected under 35 U.S.C. §103(a) as unpatentable over Gellert '283. These rejections are respectfully traversed for at least the following reasons.

I The §102 rejection is now moot in light of the above amendments, which leave claims 19, 24 and 53 as the only independent claims. In other words, none of claims 19, 24 and 53 “reads on” Gellert '283 because, as the Examiner admits, {Gellert fails to disclose a bonded process wherein the second material has a lower melting temperature than the first material.”} The §102 rejection should therefore be withdrawn.

The use of a bonding material for the tip insert (44) that has a lower melting temperature than the bonding material used to secure the heating element (32) and the collar portion (20) to the nozzle inner portion (12) facilitates removal of the tip insert without disrupting the bonds that hold the heating element and the collar portion in place. This is accomplished by heating the entire nozzle assembly to the melting temperature of the “second” bonding material (that which holds the tip insert in place), allowing that material to flow and loosen its grip on the tip insert while the material holding the heating element

and the collar portion remains solid. This is an important feature because nozzle tips suffer the most wear and damage during the molding process, and often need to be replaced.

The Examiner contends that the claimed invention would have been obvious to one of ordinary skill in the art, stating, inter alia, that “using different types of brazing material is known to one of ordinary skill in the art, since the heating requirements at the tip would need to be higher since the tip is doing the work at hand.” Office Action, page 3, last three lines. To the extent this somewhat vague statement is understood, it appears to support the opposite conclusion by suggesting that a *higher* melting point would be required for the bonding material used to secure the tip insert.

In any event, Applicant respectfully traverses this “well known in the art” allegation. The Examiner has not specifically identified a particular prior art teaching of using metallurgical bonding materials of different melting points in one product, let alone one suggesting a lower melting point for securing a tip insert in a molding machine nozzle. See M.P.E.P. §2144.03 (“If the applicant traverses such an assertion [of official notice] the examiner should cite a reference in support of his or her position.”). Gellert '283 certainly does not suggest this, nor does he leave any room for modification, because his disclosure is strictly limited to brazing of a collar and a tip insert to a nozzle *all at once* using the *same brazing material* at the *same brazing temperature*.

CONCLUSION

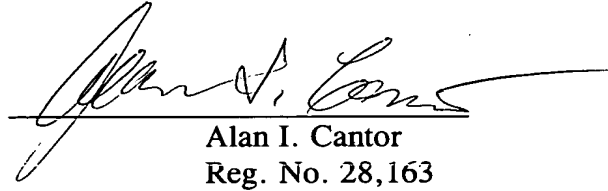
For the foregoing reasons, it is respectfully submitted that all of the claims are patentable over the applied reference. The rejections should therefore be withdrawn, and all of the claims allowed. Favorable action is earnestly solicited.

Respectfully submitted,

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MARKED-UP VERSION SHOWING CHANGES MADE

15. Canceled

17. Canceled

19. (Amended) Injection molding apparatus [as claimed in claim 18 where the] comprising a nozzle (10) with an inner portion (12) having a front end (16), a rear end (14) and a melt bore (18) extending therethrough, an electrical heating element (32) [heater is brazed] metalurgically bonded to the inner portion (12) using a first material (76), and [the] a removable tip insert (44) [is brazed] metalurgically bonded to the front end (16) of the inner portion (12) using a second material (82) [and having] which has a lower melting temperature than [the] said first material (76).

16. (Amended) Injection molding apparatus as claimed in claim [15] 19 wherein the tip insert (44) is brazed to the front end (16) of the inner portion (12).

18. (Amended) Injection molding apparatus as claimed in claim [17] 16 wherein the heating element (32) is integrally brazed into a spiral groove (34) extending around the outer surface (22) of the inner portion (12).

22. Canceled

24. (Amended) Injection molding apparatus [as claimed in claim 23 wherein the] comprising a nozzle (10) with a heater (32), an inner portion (12) having a front end (16), a rear end (14) and a melt bore (18) extending therethrough, a collar portion (20) metalurgically bonded to the inner portion (12) using a first material (76), and a tip insert (44) metalurgically bonded to the inner portion 12 using a second material (82) which has a lower melting temperature than the first material (76).

23. (Amended) Injection molding apparatus as claimed in claim [22] 24 wherein the collar portion (20) and the tip insert (44) are brazed to the inner portion.

26. (Amended) Injection molding apparatus as claimed in claim 25 wherein the heating element (32) is integrally brazed in a spiral groove (34) extending around the outer surface [922)] (22) of the inner portion (12) using a material which has a higher melting temperature than said second material.

49. Canceled

50. Canceled

51. Canceled

53. (Amended) Injection molding apparatus [as claimed in claim 49] comprising a nozzle with a heater, an inner portion having a front end, a rear end and a melt bore extending therethrough, and a tip insert metalurgically bonded to the front end of the inner portion, the tip insert having a melt bore extending therethrough that communicates with the melt bore in the inner portion, wherein the heater comprises an electrical heating element brazed into a spiral groove around the outer surface of the inner portion using a first material, and the tip insert is brazed to the front end of the inner portion using a second material having a lower melting temperature than the first material.

52. (Amended) Injection molding apparatus as claimed in claim [51] 55, wherein the seat and the rear portion of the tip insert are cylindrical.

56. (Amended) Injection molding apparatus as claimed in claim [49] 53, wherein the tip insert has a tapered front end, and at least a portion of the melt bore in the tip insert extends diagonally outwardly to the outer tapered surface of the front end of the tip insert.